

Warm Up Grade 7

Nov 9, 2022



1. Write equations for each of the following (remember to tell what your variable stands for):

(a) a number increased by 13 is 77 let $n \equiv$ a number

$$n + 13 = 77$$

(b) Stan age increased by 8 is 60 let $s \equiv$ Stan's age

$$s + 8 = 60$$

(c) Twice the amount of snow that fell increased by 32 is 100 cm. $p \equiv$ amount of snow

$$2p + 32 = 100$$

(d) three times the number of students at the dance increased by 64 is 900.

$$3n + 64 = 900$$

(e) the mass of the elephant divided by 8 is 220.

$$\frac{m}{8} = 220 \text{ or } m \div 8 = 220 \text{ let } m \equiv \text{mass of elephant}$$

2. Translate the following into words:

(a) $4c - 2 = 18$

4 times a number decreased by 2 is 18

(b) $5d = 80$

5 times a number is 80

(c) $n - 7 = 21$

a number subtract 7 is 21

(d) $x + 11 = 43$

a number increased by 11 is 43

Warm Up Solutions

1. Write equations for each of the following (remember to tell what your variable stands for):

(a) a number increased by 13 is 77

$c = \text{the number}$

$$c + 13 = 77$$

(b) Stan age increased by 8 is 60

$t = \text{Stan's age}$

$$t + 8 = 60$$

(c) Twice the amount of snow that fell increased by 32 is 100 cm.

$n = \text{amt of snow}$

$$2n + 32 = 100$$

(d) three times the number of students at the dance increased by 64 is 900.

$s = \text{number of students}$

$$3s + 64 = 900$$

(e) the mass of the elephant divided by 8 is 220.

$e = \text{mass of elephant}$

$$\frac{e}{8} = 220$$

2. Translate the following into words:

(a) $4c - 2 = 18$

four times the amt of rain decreased by 2 is 18

(b) $5d = 80$

5 times the amt of candy equals 80

(c) $n - 7 = 21$

The number of choc. bars decreased by 7 is 21

(d) $x + 11 = 43$

The number of rookies increased by 8 is 43.

Homework pg. 36 # 1-8

1. Write an equation for each sentence.

a) Eight more than a number is 12.

$$8 + n = 12$$

or

$$n + 8 = 12$$

Page 36 *Homework Solutions* # 1 to # 7

b) Eight less than a number is 12.

$$a - 8 = 12$$



2. Write a sentence for each equation.

a) $12 + n = 19$

b) $3n = 18$

c) $12 - n = 5$

d) $\frac{n}{2} = 6$

a) $p =$ the # of people

$$6p = 258$$

b) $s =$ number of students

$$\frac{s}{2} = 21$$

3. Write an equation for each sentence.

a) Six times the number of people in the room is 258.

b) One-half the number of students in the band is 21.

c) The area of a rectangle with base 6 cm and height h centimetres is 36 cm².

$$A = \text{base} \times \text{height}$$

$$36 = 6 \times h$$

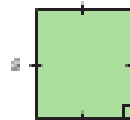
$$c) 6 \times h = 36$$

or

$$6h = 36$$

Homework Solutions

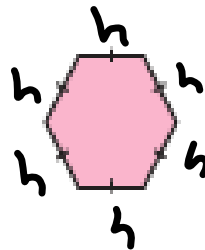
4. The perimeter of a square is 156 cm.
Write an equation you could use to find the side length of the square.



Recall that perimeter is the distance around a shape.

$$4s = 156 \quad \text{or} \quad \underbrace{s + s + s + s}_{4s} = 156$$

5. The side length of a regular hexagon is 9 cm.
Write an equation you could use to find the perimeter of the hexagon.



$h = \text{perimeter}$
 $6 \times 9 = h$

$$\begin{aligned} 6h &= P \\ 6 \times 9 & \\ 54 &= P \end{aligned}$$

6. Match each equation with the correct sentence.

- | | | |
|-----------------|--|---|
| a) $n + 4 = 8$ | A. Four less than a number is 8. | c |
| b) $4n = 8$ | B. Four more than four times a number is 8. | d |
| c) $n - 4 = 8$ | C. The <u>sum</u> of four and a number is 8. | a |
| d) $4 + 4n = 8$ | D. The <u>product</u> of four and a number is 8. | b |
- multiply $4n = 8$

7. Alonso thinks of a number.
He divides the number by 4, then adds 10.
The answer is 14.
Write an equation for the problem.

$$\frac{n}{4} + 10 = 14$$

n Homework Solutions

$$\frac{n}{4}$$

$$\frac{n}{4} + 10 = 14$$

8. **Assessment Focus**

- a) Write an equation for each sentence.
- Five times the number of students is 295.
 - The area of a rectangle with base 7 cm and height h centimetres is 28 cm^2 .
 - The cost of 2 tickets at x dollars each and 5 tickets at \$4 each is \$44.
 - Bhavin's age 7 years from now will be 20 years old.
- b) Which equation was the most difficult to write? Why?
- c) Write your own sentence, then write it as an equation.

$$5n = 295$$

$$7 \times h = 28 \quad (7h = 28)$$

$$2x + 20 = 44$$

$$c + 7 = 20$$

Sheet 13 Class work

Name: _____

Grade 7 Unit 1: Patterns & Relations

Sheet 13

1) For each of the following charts,

i) Fill in the missing numbers.

ii) Write the relations as an algebraic expression

iii) Describe the relation in words (Term = ____ times term # Plus or Minus Constant)

a)

Term Number	1	2	3	4	5	6
Term	10	13	16	19	22	25

$3n + 7$ $n = 1$ out = 10

$3n$ $+ 7$
 $3(1)$ $+ 7$
 3 $+ 7$

b)

Term Number	1	2	3	4	5	6
Term	10		12		14	

c)

Term Number	1	2	3	4	5	6
Term	3	7	11	15	19	23

d)

Term Number	1	2	3	4	5	6
Term	7	13	19	25	31	37

e)

Term Number	1	2	3	4	5	6
Term	10	20	30	40	50	60

2) a) For Part 1d) find the value of the 15th term. (Use algebraic expression and a calculator to get answer)

$6n + 1$ $n = 15$
 $6(15) + 1$

b) For part 1e) find the value for the 12th term. (Use algebraic expression to get answer)

3) Kevin is planning a wedding and the cost to rent the hall is \$250. The cost of food is \$20 per person.

a. Complete a chart of Kevin's total cost related to number of people for the first 6 people.

var
Total

# people	1	2	3	4	5	6
Cost	270	290	310	330	350	370

$20p$

$p = 1$
 $20(1) + 250$
 $20 + 250$
 270

$20 \times 2 + 250$
 $40 + 250$
 290

b. Write the algebraic relation of total cost to # of people using "p" as the variable.

$Cost = 20p + 250$

c. Explain the relation in words.

As # of people increases by 1, the cost increases by \$20.

- 4) a) Write the perimeter of a regular octagon as an algebraic expression if each side has a length of "n".

b) Find the perimeter if the length of the side of the regular octagon is 6 cm.

- 5) Ted is having a party. The cost to rent the hall is \$25 and the cost for food is \$10 per person.

- a. Create a chart that relates the number people to the total cost.

# of people, p	1	2	3	4	5	6
Total Cost						

- b. Write out the relations as an algebraic expression.

- c. Write the relation in words.

- d. What is the total cost when 90 people are invited? (Show work)

- e. What is the total cost when 25 people are invited? (Show work)

- f. What is the new expression if the cost of food doubles?

- 6) **SIMPLIFY** then evaluate each of the following: (MUST COLLECT LIKE TERMS FIRST)

- a. $4t + 7p - 2p + 6t - t + 5$, $p = 2$ & $t = 7$ b) $5ab + 6b - 10 + 6b$; $a = 2$ & $b = 5$

- c) $5r + 6w + 7r + 2w - 4r$; $r = 3$ & $w = 2$

- 7) Write an algebraic expression for each of the following. (Remember to define your letter for the variable)

- a) Product of 14 and a number.

- b) A number subtract from 26

- c) A number increased by 3

- d) Triple a number plus 21

- e) A number reduced by 8

- f) 31 subtract a number

- 8) Write the expression as words

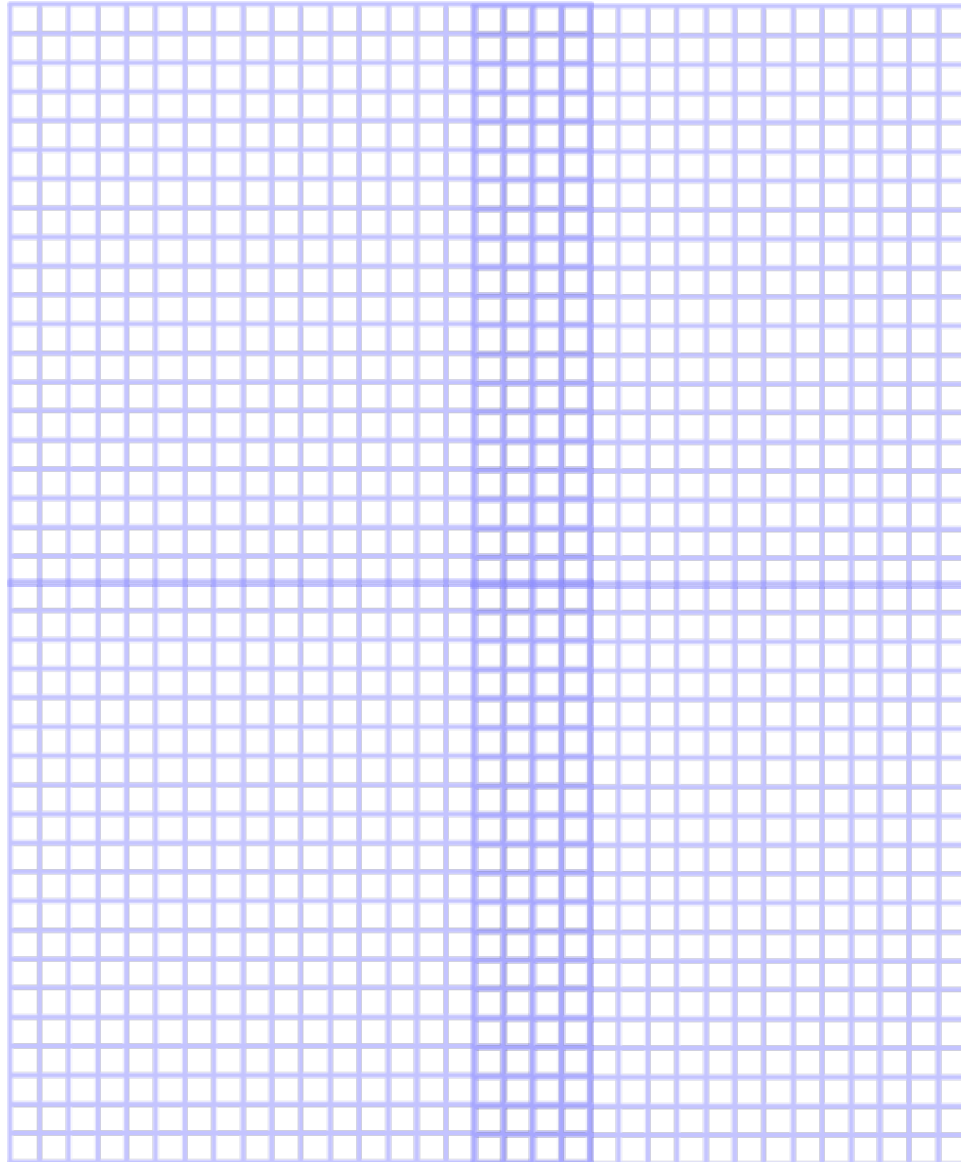
- a. $d - 11$

- b. $100 - b$

- c. $3n + 6$

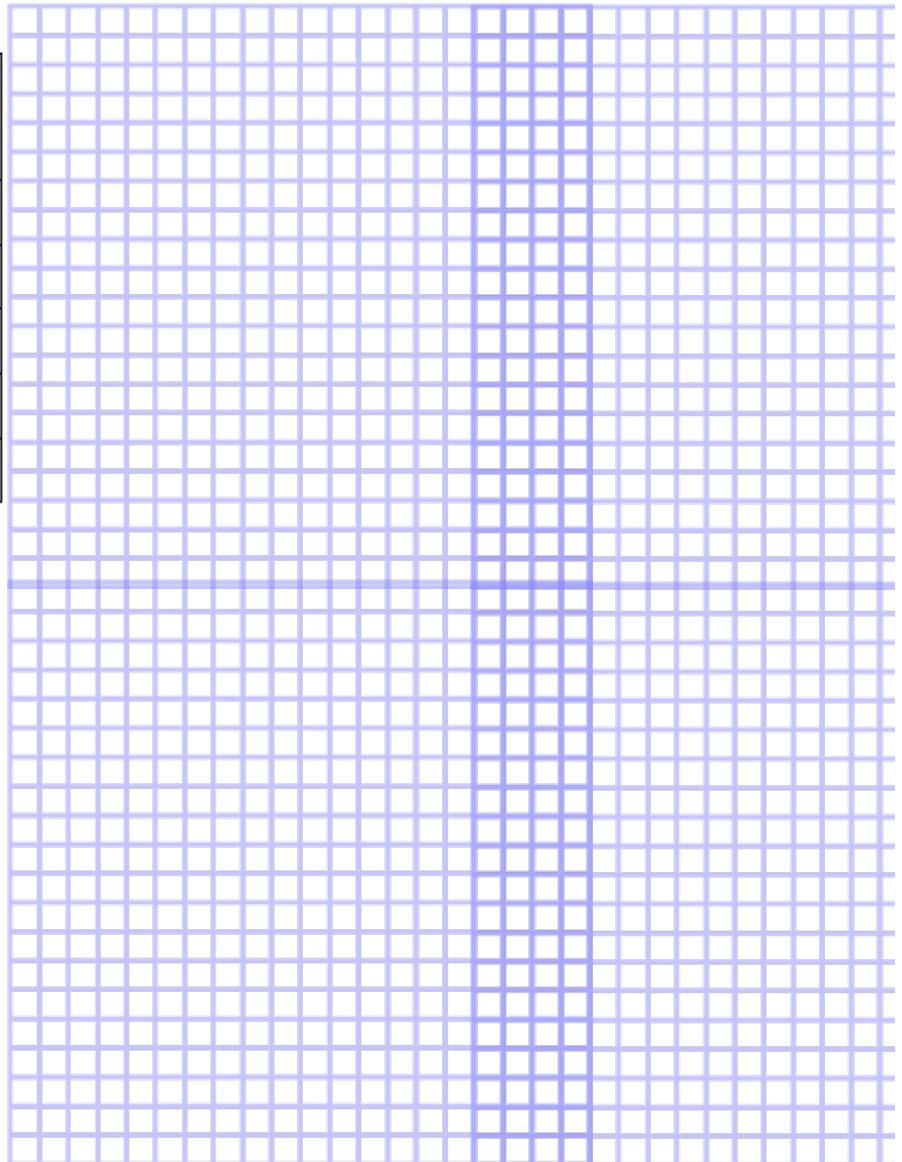
1) a)

Input f	Output f + 14
1	
2	
3	
4	
5	



9b)

Input k	Output $11k - 1$
1	
2	
3	
4	
5	



STOP

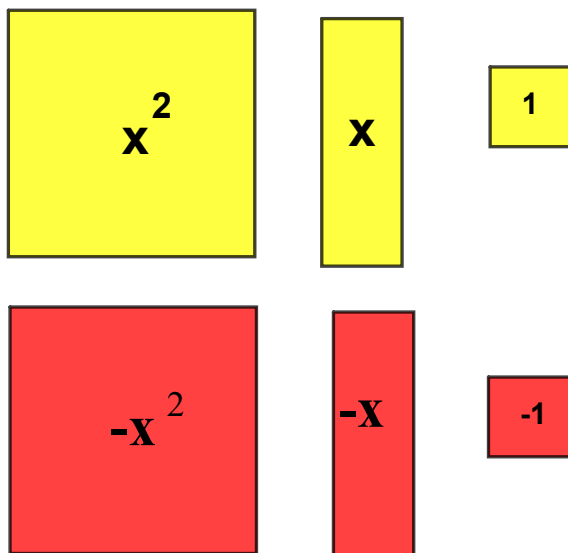
Solving Equations

Solving equations is when you find the value for the variable. One way to solve equations is by modeling.

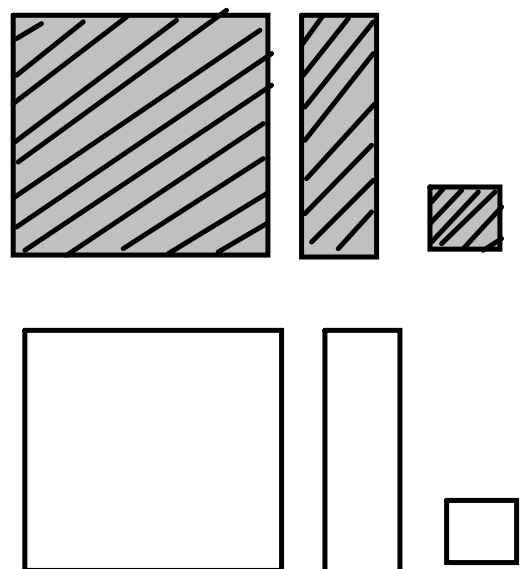
Algebra tiles can also be used to help you solve equations.

When you draw the algebra tiles, you always shade in the positive and the negatives are not shaded.

On the computer



When drawn:



Write an equation for each model

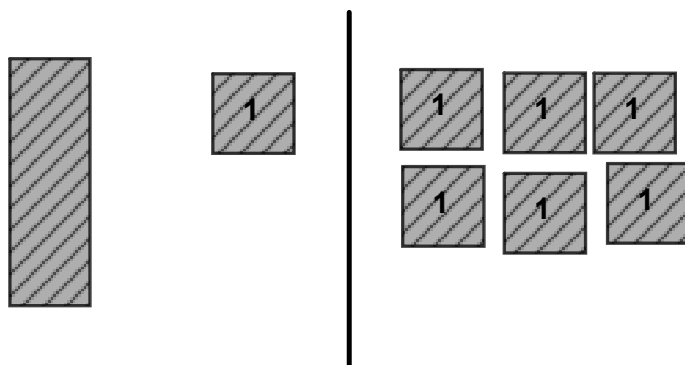
a)

b)

c)

Example: Use tiles to solve

Remember, whenever you are solving equations, whatever you do to one side of the equation, you **MUST** do to the other.



Write the equation

Need to get "x" all by itself

You have to take away 1 from the left side, so you have to also take one away from the right side

solution

Solve the following

$$\begin{array}{c|c}
 \begin{array}{c} \boxed{x} \\ \boxed{-1} \\ \boxed{-1} \end{array} & \begin{array}{c} \boxed{1} \quad \boxed{1} \\ \boxed{1} \end{array}
 \end{array}$$

b)

$$\begin{array}{c|c}
 \begin{array}{c} \boxed{x} \\ \boxed{1} \\ \boxed{1} \end{array} & \begin{array}{c} \boxed{-1} \\ \boxed{-1} \end{array}
 \end{array}$$

Example:

5 more than double a number is 13.

- a) Write an equation you can solve to find the number.
- b) Use tiles to SOLVE the equation
- c) Verify the solution

Example:

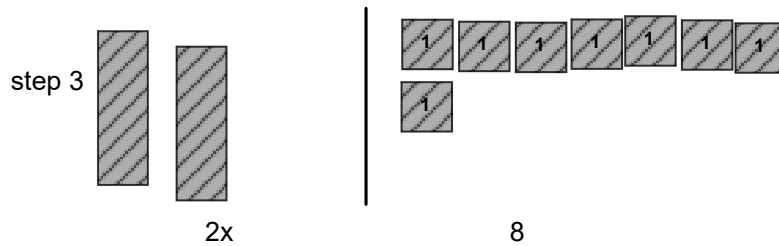
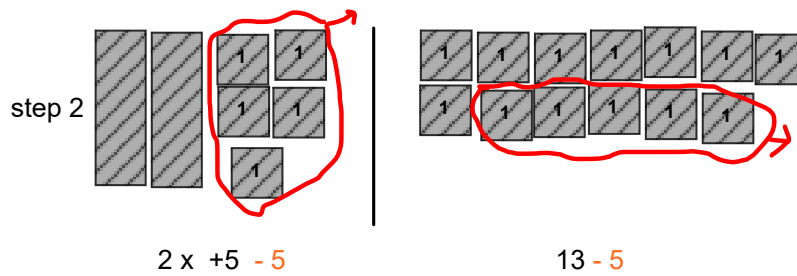
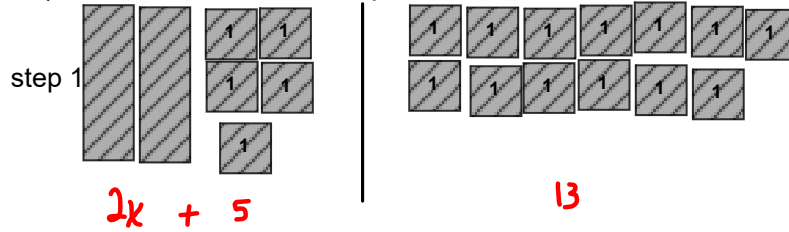
5 more than double a number is 13.

let "x" represent the number

a) Write an equation you can solve to find the number.

$$2x + 5 = 13$$

b) Use tiles to SOLVE the equation



line up into "2" groups



step 4) $x = 4$

c) Verify $2x + 5$

sub in $x = 4$ into the left hand side

$$2(4) + 5$$

$$8 + 5$$

$$13$$

Right hand side

We know we are correct

$$2x + 5 = 13$$

Homework pg. 41 # 1-3

Test next week

Grade 7 Unit 1 Shee 13.docx